Introduction

This document provides instructions for installing an accessory on a Cat® Utility Vehicle (CUV). Do not perform any procedure in this document until you have read and understood the information contained in this document and the Operation and Maintenance Manual.

Safety Section

WARNING

Do not operate or work on this product unless you have read and understood the instruction and warnings in the relevant Operation and Maintenance Manuals and relevant service literature. Failure to follow the instructions or heed the warnings could result in injury or death. Proper care is your responsibility.

WARNING

Failure to follow all safety guidelines prescribed in this document and by governing authorities and regulatory agencies may result in severe injury or death of personnel or machine damage.

WARNING

When removing a major component or attachment, ensure that it is properly blocked or secured before removing mounting hardware. An assembly that is disconnected without proper blocking may shift or fall, resulting in serious injury or death of personnel or machine damage.

WARNING

Personal injury or death can result from improper maintenance procedures. To avoid injury or death, follow the procedures exactly as stated below.

WARNING

Personal injury can result from improper handling of chemicals. Make sure you use all the necessary protective equipment required to do the job. Make sure that you read and understand all directions and hazards described on the labels and material safety data sheet of any chemical that is used. Observe all safety precautions recommended by the chemical manufacturer for handling, storage, and disposal of chemicals.

WARNING

Before servicing/performing maintenance on the machine, electrical power must be physically disconnected; battery cables must be disconnected from the battery. All applicable lock out and tag out procedures must be followed.

WARNING

Observe the safe working load limits of all lifting and blocking devices and keep a safe distance from suspended/blocked loads. Personnel may be seriously injured or killed by falling loads.

WARNING

Do not operate the machine if any guards or covers are missing or inadequately secured. Personnel could be seriously injured or machine damage may occur.

Caterpillar®
Installation Instructions - Accessory Kit
Winch Install Kit
(p/n 546-0916)

■ **NOTE: Read these Installation Instructions thoroughly before beginning the installation process. Retain these Installation Instructions for future reference.**

Kit includes:

QTY	DESCRIPTION
10	Cable Tie
1	Lighted Winch Switch
1	Winch Solenoid
1	Solenoid Bracket
1	Battery Cable (Red 18 in.)
1	Battery Cable (Black (10 in.)
1	Solenoid Cable (Yellow 96 in.)
1	Solenoid Cable (Blue (92 in.)
1	Harness
8	Hex Nut w/Washer (M6)
3	Terminal Boot
1	Roller Fairlead
1	Winch Hook
4	Spring Lock Washer
4	Cap Screw (M8 x 20 mm)
2	Cap Screw (M10 x 20 mm)
4	Flange Nyloc Nut (M10)
4	Machine Screw (M6 x 16 mm)
1	Winch Mount

Tools Required:

- T30 Torx Bit
- 10 mm Wrench/Socket
- 13 mm Wrench/Socket
- Ratchet Wrench
- Ratchet Extension
- Torque Wrench
- Deburr Tool
- Suitable Cutting Tool

⚠	The Safety Alert Symbol means ATTENTION! BE ALERT! YOUR SAFETY IS INVOLVED.
⚠ WARNING	Failure to follow WARNING instructions could result in severe injury or death to the vehicle/ winch operator, a bystander, or a person inspecting or repairing the vehicle or winch.
CAUTION	A CAUTION indicates special precautions that must be taken to avoid damage to the vehicle.
■ NOTE:	A NOTE provides key information to make procedures easier or more clear.

INSTALLING WINCH/INSTALL KIT

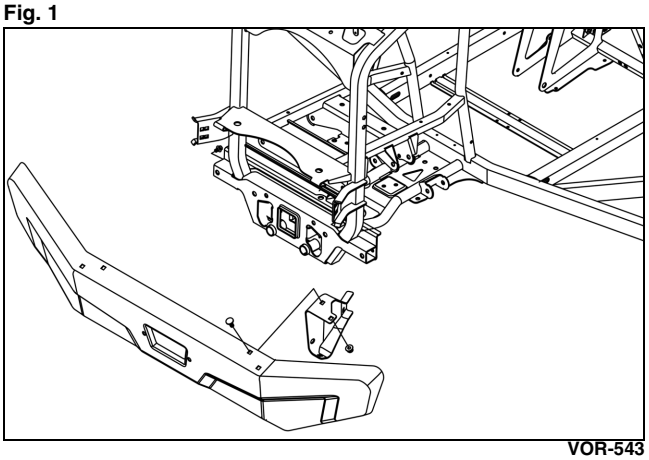
■ **NOTE: Retain the warning label and winch cable tightening instructions tied to the cable for future reference.**

CAUTION

Remove the bottom screw securing the winch together or damage to the cable/rope may occur. This should be retained for winch service.

1. Shift the vehicle into park and remove the key from the ignition; then disconnect the battery.
2. Remove the six nuts and six carriage bolts securing the front bumper to the bumper brackets. Remove the bumper. See Fig. 1.

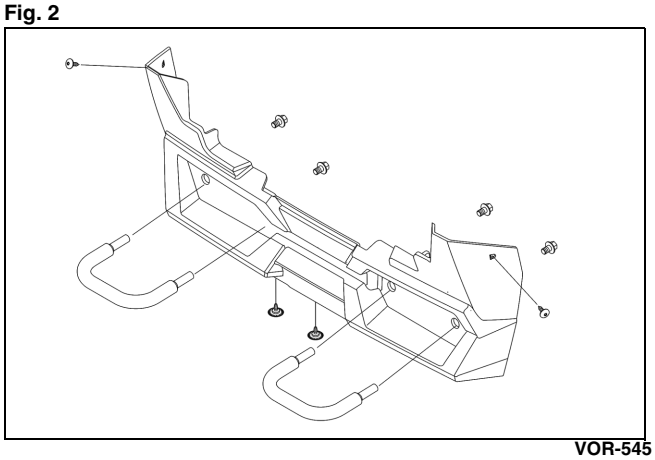
Fig. 1



VOR-543

3. Remove the four cap screws securing the front hooks to the frame; then remove the four screws securing the lower front grill. See Fig. 2.

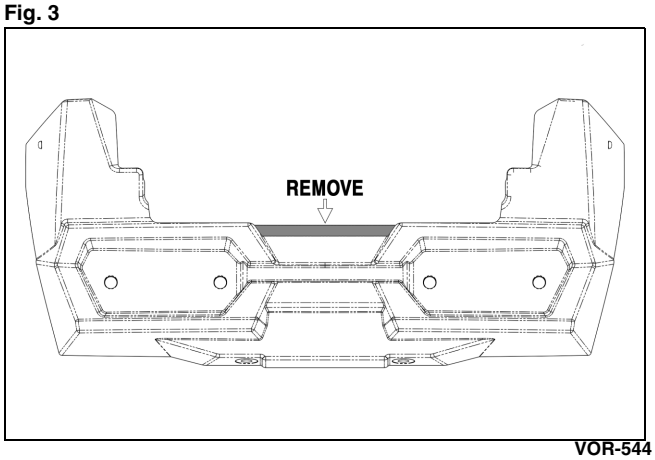
Fig. 2



VOR-545

4. Using a suitable cutting tool, remove the top center portion (approximately 1/2-in.) of the front grill. Deburr the edges after the shaded area is removed. See Fig. 3.

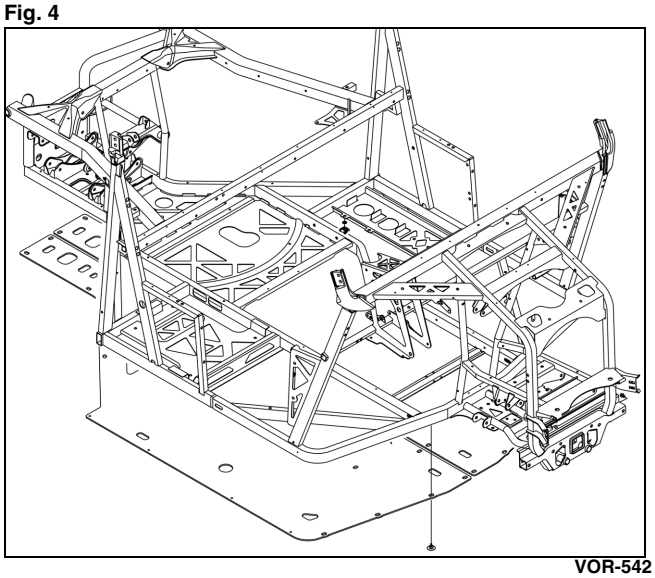
Fig. 3



VOR-544

5. Remove the screws securing the right-side (passenger side) skid plate to the frame. Remove the skid plate from the vehicle. See Fig. 4.

Fig. 4



VOR-542

6. Secure Winch to the top side of Winch Mount using four Cap Screws (M8 x 20 mm) and four Spring Lock Washers. Tighten to 20 ft-lb. See Fig. 5.

Fig. 5

ROV-903

7. Position winch mount assembly with the four holes in the frame; then secure the winch mount to the frame using four M10 Flange Nyloc Nuts. Tighten to 30 ft-lb. See Fig. 6.

Fig. 6

ROV-917

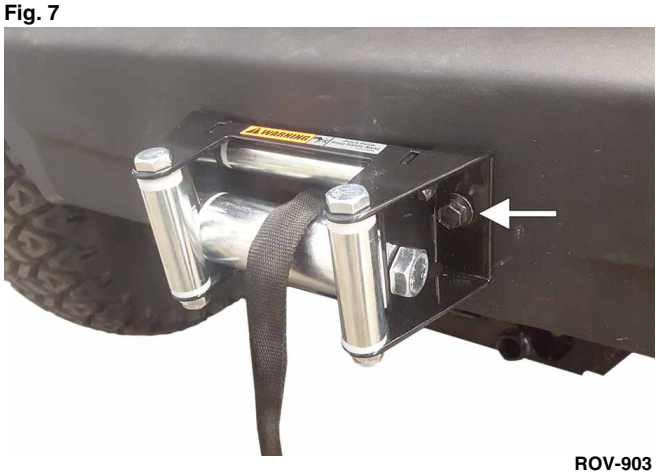
8. Install the front grill and front hooks using the existing hardware. Tighten securely.

9. Turn the selector knob to the “freespool” position. Pull the cable/rope loop through the bumper and roller fairlead until the loop is clear of the roller fairlead (approximately 3-4 in.); then turn the selector knob to the “ENGAGED” position.

10. Loosely secure the front bumper using the existing hardware.

11. Secure the fairlead to the winch bracket using two Cap Screws (M8 x 20 mm). Tighten to 35 ft-lb. See Fig. 7.

Fig. 7



ROV-903

12. Tighten the front bumper hardware securely.

13. Place the clevis end of the tow hook onto the winch cable/rope loop and secure with the clevis pin; then using a hammer, force the cotter pin through the clevis pin. The cotter pin will spread automatically. Install the hook strap. See Fig. 8.

Fig. 8

ROV-914

Installing Solenoid

1. Raise the cargo box. Loosen the quarter turn securing the right-side protective panel (in front of the right rear tire). Remove the panel.

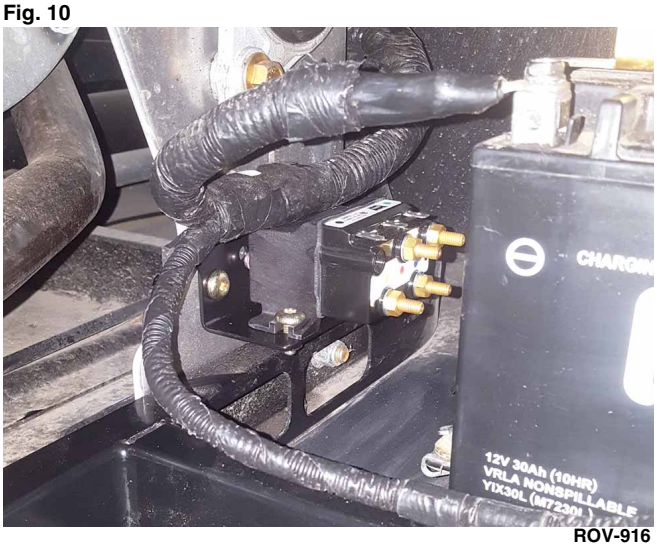
2. Secure Winch Solenoid to the solenoid bracket using two Machine Screws (M6 x 12 mm) and two M6 Hex Nuts. Tighten securely. See Fig. 9.

Fig. 9

ROV-915

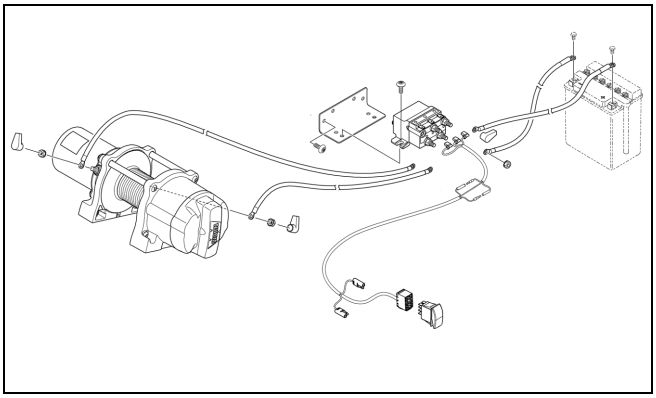
3. Locate the two mounting holes in the right-side engine bracket (to the left of the battery); then secure the solenoid and bracket assembly to the engine bracket using two machine screws (M6 x 12 mm) and two M6 hex nuts. Tighten securely. See Fig. 10.

Fig. 10



ROV-916

Installing Harness and Cables



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⚠ WARNING

FIRE HAZARD

Failure to observe these instructions could lead to severe injury or death.

Never route electrical cables:

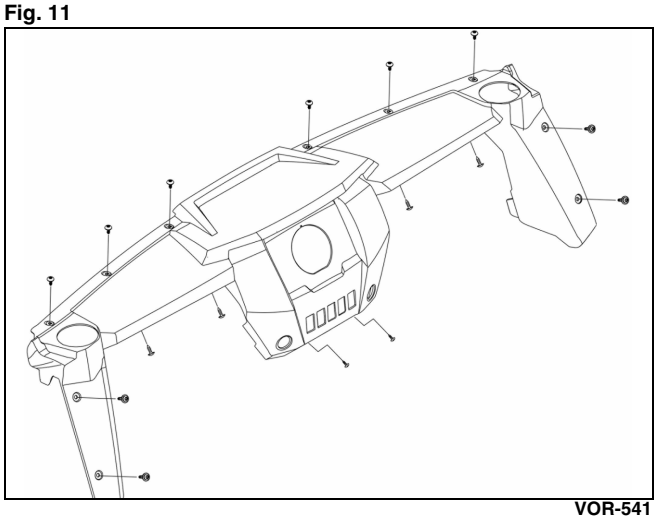
- Across any sharp edges.
- Through or near moving parts.
- Near parts that get hot.

Always insulate and protect all exposed wiring and electrical terminals.

Always install terminal boots as directed in installation instructions.

1. Remove the hood; then remove the screws securing the mid dash panel. Move the mid dash panel rearward to access the accessory plugs in the center of the dash. See Fig. 11.

Fig. 11

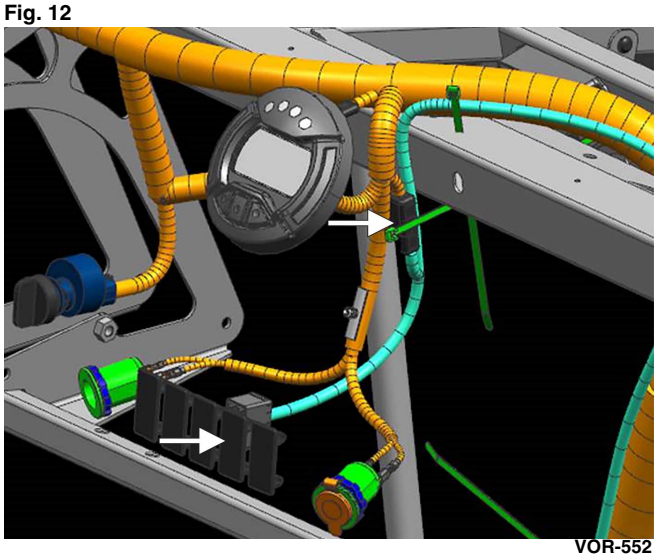


VOR-541

2. **Remove the farthest right plug from the switch panel** located to the right of the gear shifter; then insert Winch Switch until it snaps into place.

3. Plug Harness into the winch switch; then locate the molded accessory plug with an orange wire and a black wire located behind the gauge. Plug the switch control harness into the molded plug making sure the wire colors match when connected. See Fig. 12.

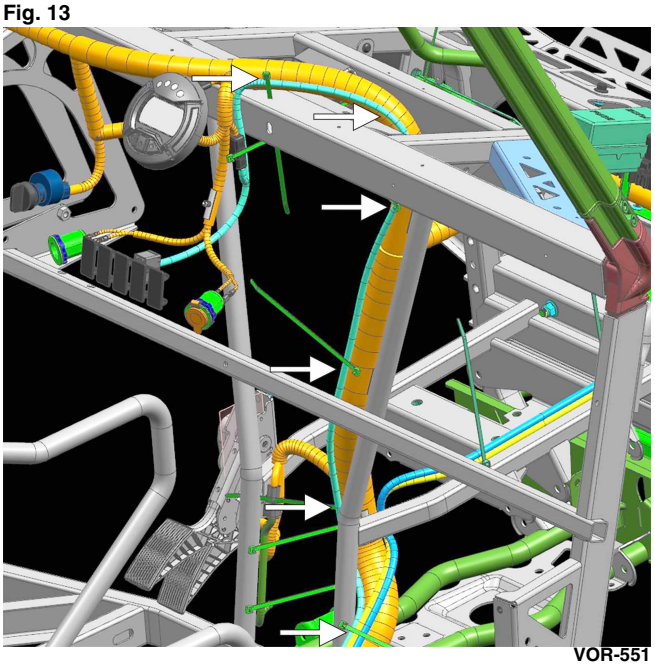
Fig. 12



VOR-552

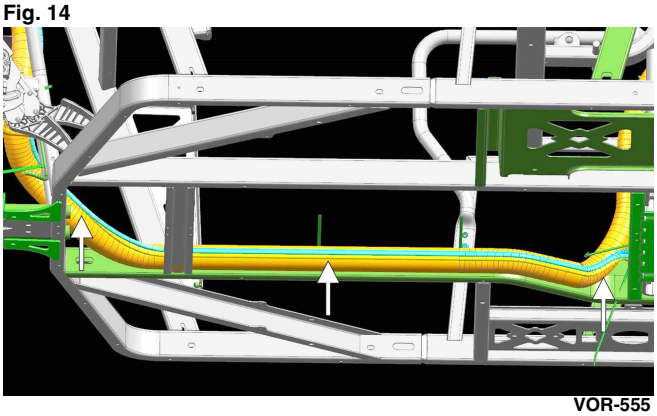
4. Route the harness along the main harness under the upper dash panel and down the right side of the vehicle. Route the harness down along the main harness under the vehicle and back to the solenoid. See Fig. 13 and 14.

Fig. 13



VOR-551

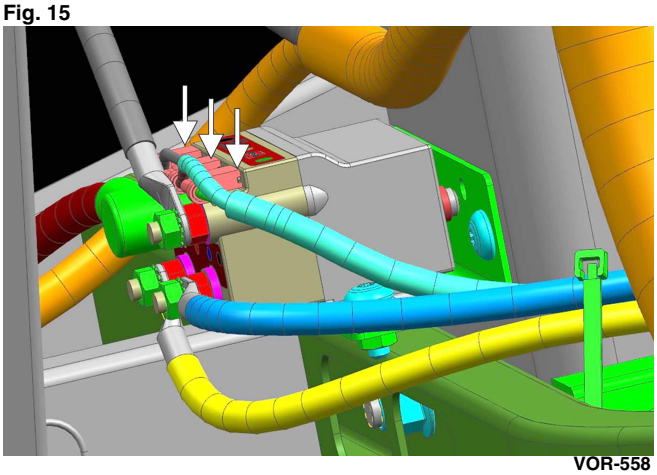
Fig. 14



VOR-555

5. Install harness to the solenoid making sure the wire colors match the colored dots on the solenoid. See Fig. 15.

Fig. 15

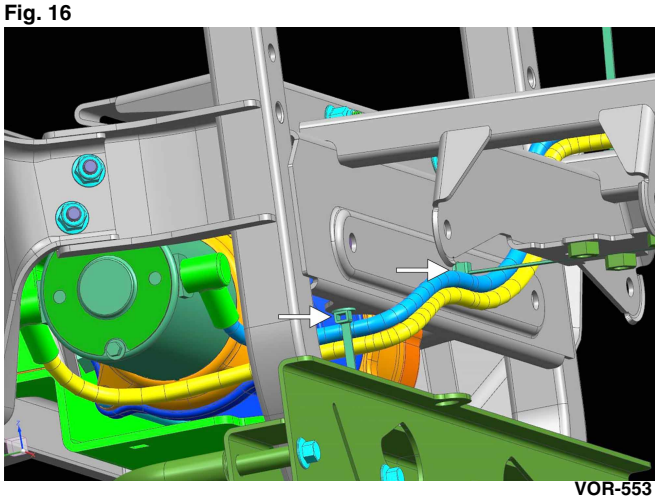


VOR-558

6. Install a terminal boot over one end of the Blue and the Yellow Cables (solenoid-to-winch). Connect the boot-end of each cable to the winch motor with the blue cable to the terminal stud marked with a blue dot. Connect the yellow cable to the yellow stud. Secure with M6 nuts and washers; then slide each terminal boot over the terminals. See Fig. 16.

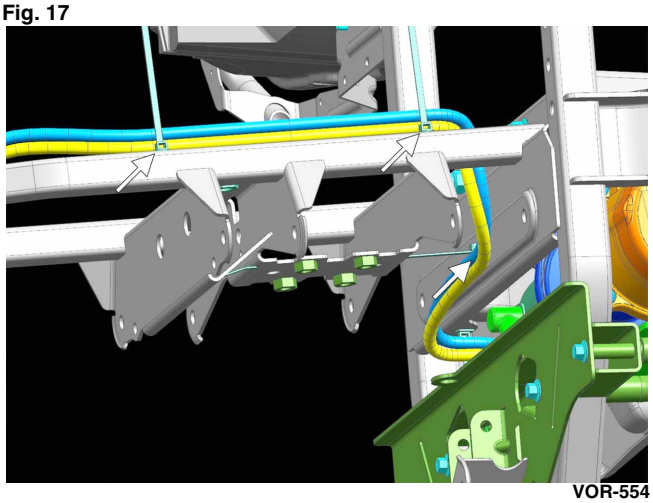
7. Route the cable down under the frame (just behind the winch) and up and over to the right-side of the frame. Route the cables along the frame back to where the main harness routes to the back of the vehicle. Cable tie as needed. See Fig. 16, 17, and 18.

Fig. 16



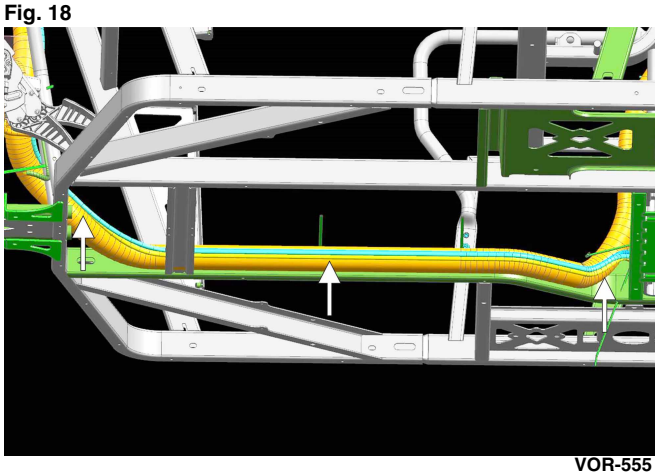
VOR-553

Fig. 17



VOR-554

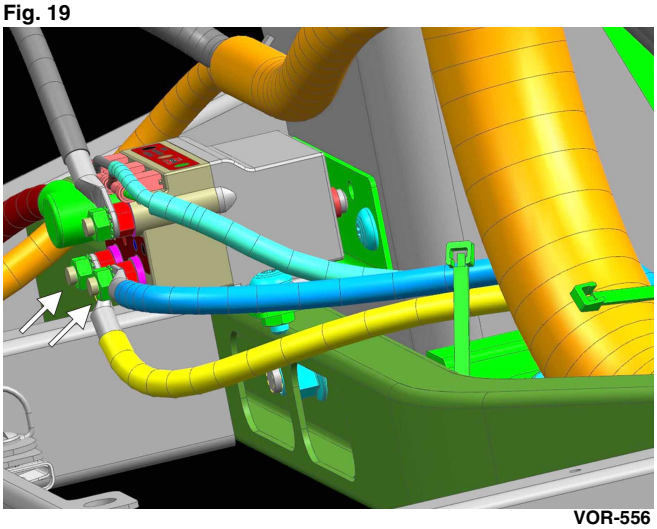
Fig. 18



VOR-555

8. Connect the blue cable to the blue terminal and the yellow cable to the yellow terminal on the solenoid. Tighten securely with M6 Hex Nuts w/Washers. Secure the cables and wires with cable ties as needed. See Fig. 19.

Fig. 19



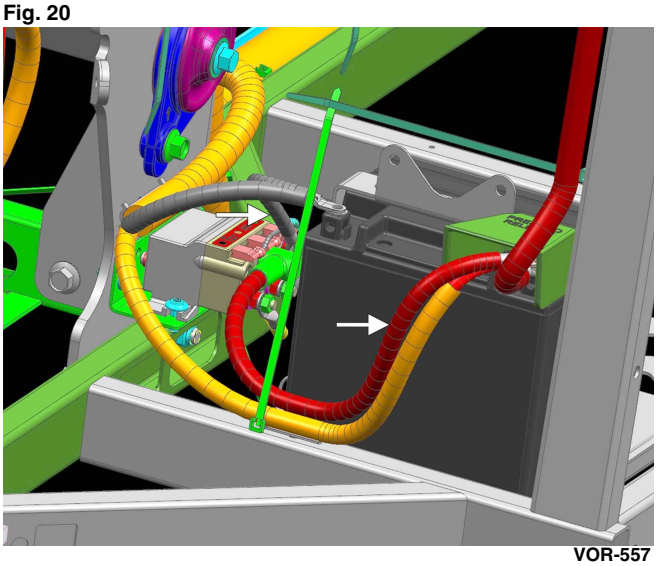
VOR-556

9. Connect the 10-in. Black Cable (battery-to-solenoid) to the black terminal on the solenoid. Tighten securely with M6 hex nut w/washers. Slide a terminal boot over one end of the 18-in. Red Cable and connect that end to the red terminal on the solenoid. Tighten securely with M6 hex nut w/washers; then slide the boot over the solenoid terminal. See Fig. 20.

10. Route the red and the black cables to the battery; then secure the positive battery cables to the positive (+) battery post. Tighten securely. See Fig. 20.

11. Secure the negative battery cables to the negative (-) battery post. Tighten securely. Secure the cables and wires with cable ties. See Fig. 20.

Fig. 20



VOR-557

12. Install the right side protective panel and secure using the quarter turn; then close and latch the cargo box.

13. Install the right-side skid plate using the existing screws. Do not over-tighten.

14. Install the dash panels and the hood using the existing hardware. Tighten securely.

See BASIC GUIDE TO WINCHING TECHNIQUES provided with the winch for important and helpful information.

SYSTEM CHECK

Before using the winch, verify the following:

- Wiring to all components is correct. All loose wires are cable tied tight.
- There are no exposed wiring or terminals (cover any existing exposures with insulator plate), terminal boots, heat shrink tubing, or electricians' tape.
- The solenoid is properly grounded.
- Turn key switch to ON position. Check winch for proper operation.

CAUTION

KNOW THE WINCH: Take time to fully understand the winch and the winching operation.

Testing The Winch And Controls

1. With the ignition switch off and the key removed, turn the winch selector knob to the "freespool" position. Pull out approximately two to three feet of cable from the winch reel.
2. Turn the winch selector knob to the "engaged" position; then insert the ignition key into the ignition switch, and turn to the ON position.
3. Place the winch control in the "IN" position and observe the movement of the winch cable. If the cable does not wind onto the reel in the proper direction, reverse the lead connections on the winch motor terminals and test the winch again.

■ NOTE: The cable must wind and spool from the top of the reel.

■ NOTE: The wire cable must always spool onto the drum as indicated by the drum rotation decal on the winch frame.

OPERATING INSTRUCTIONS

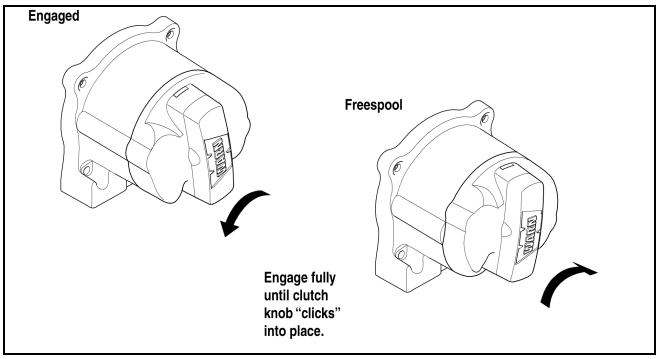
CLUTCH OPERATION

⚠ WARNING

TO PREVENT SERIOUS INJURY OR PROPERTY DAMAGE:

- Do not disengage clutch if winch is under load or wire cable is in tension.

When the clutch is engaged, the gear train is coupled to the wire cable drum and power may be transferred from the winch motor. When the clutch is in freespool, the gear train and wire cable drum are uncoupled allowing the drum to rotate freely. The clutch knob, located on the winch housing opposite the motor, controls the clutch position. To prevent damage, always fully engage or fully disengage the clutch knob.



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OVERLOADING/OVERHEATING

This winch is rated for intermittent duty. It should not be operated with the motor slowed down to a low RPM. When the motor approaches stall speed, a very rapid heat build-up occurs which may cause motor damage. To judge safe running time, stop winching and lay your hand on the motor. If the temperature is uncomfortable, shut down and cool the motor. This can be used as an opportunity to recharge the battery. Double line rigging will reduce the amperage draw from the motor allowing longer continual use (see Rigging sub-section).

BATTERY RECOMMENDATIONS

A fully charged battery and good connections are essential to the proper operation of the winch. A minimum 12 DC volt 10 Amp-hour-rated battery is required.

MAINTENANCE

- No lubrication is required for the life of the winch.
- Check battery cables at 90 day intervals to be certain that they are clean and tight at all connections.
- Inspect the wire cable before and after each winching operation. Replace when damaged.

Operating The Winch

■ NOTE: Read and understand the winch operating instructions before operating the winch. Keep the winch instruction with the vehicle at all times.

⚠ WARNING

Read, follow, and understand the operating procedures to ensure personal safety and long winch life. Extreme caution must be exercised when winching and spooling. Observe all caution and warning labels at all times. Read the Operator's Manual thoroughly before using the winch.

CAUTION

Prolonged winch operation can lead to deep cycling of the battery. Failing to allow adequate charging time for the battery could result in power failure or damage.

Stretching Wire Cable

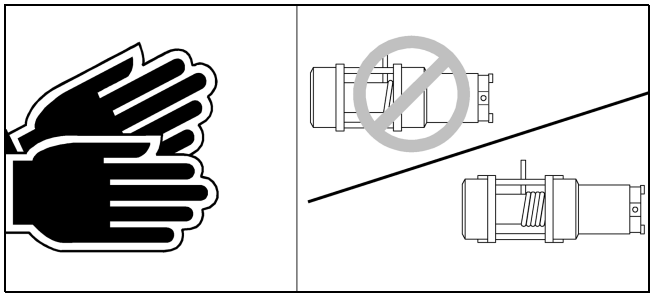
The life of a wire cable is directly related to the care and use it receives. During its first use, a new wire cable must be spooled onto its drum under a load of at least 227 kg (500 lb). Spool out the wire cable to the last 5 wraps on the drum; then power in the wire cable under a load of 227 kg (500 lb) or more.

■ **NOTE: Stretching the new wire cable will help create an even and tight wire wrap around the drum. Failure to do so will cause binding and possible damage to the wire cable.**

Spooling Out

Freespooling is generally the quickest and easiest way to spool out wire cable. Before freespooling wire cable from the winch, "power out" enough cable to remove any cable tension; then turn the winch selector knob to the "freespool" position. Manually freespool out enough wire cable for the winching operation.

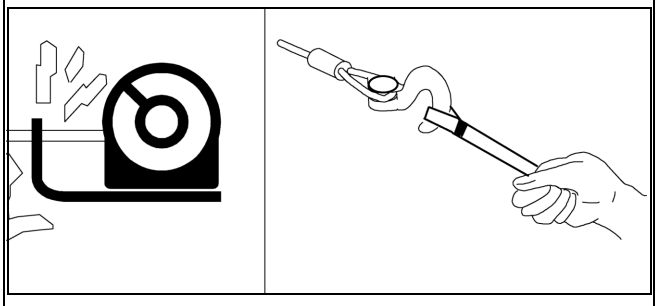
⚠ WARNING



TO AVOID INJURY AND PROPERTY DAMAGE:

- Wear heavy leather gloves when handling wire cable.
- Never winch with less than 5 wraps of wire cable around drum.

⚠ WARNING



TO PREVENT SERIOUS INJURY:

- Keep hands clear of wire cable, hook, and fairlead opening during operation.
- Always use the hook strap to hold hook when spooling.

SPOOLING IN UNDER LOAD

- The wire cable must always spool onto the drum as indicated by the drum rotation decal on the winch.
- Power in the wire cable evenly and tightly on the drum. This prevents the outer wire wraps from drawing into the inner wraps, binding, and damaging the wire cable.
- Avoid shock loads when spooling by using the control switch intermittently to take up wire cable slack. Shock loads can momentarily far exceed the winch and wire cable ratings.
- When powering in wire cable during side pull operations, the wire cable will stack up at one end of the drum. Eventually, this stack will become large enough to cause serious damage to the winch. To prevent damage, line up pulls as straight ahead as possible and stop winching if the wire cable comes close to the tie rods or mounting plate. To correct an uneven stack, spool out that section of the rope and reposition it to the opposite end of the drum which will free up space for continued winching.

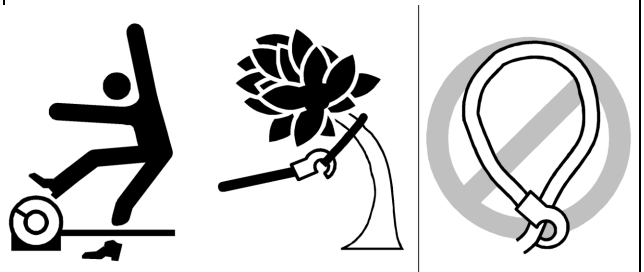
SPOOLING IN UNDER NO LOAD

- **Assisted:** Have an assistant hold the hook with a cord or rag putting as much constant tension on the wire cable as possible. While keeping tension, the assistant should walk toward the winch while you operate the control switch spooling in the wire cable. Release the switch when the hook is a minimum of 4 ft (1.2 m) from the fairlead opening. Spool in the remainder for storage.
- **Unassisted:** Arrange the wire cable to be spooled so it will not kink or tangle when spooled. Be sure any wire cable on the drum is tightly and evenly layered. Spool enough wire cable to complete the next full layer on the drum. Tighten and straighten the layer. Repeat process until the hook is a minimum of 4 ft (1.2 m) from the fairlead. Spool in the remainder for storage.

SPOOLING REMINDER FOR STORAGE

Keep hands clear of wire cable, hook, and fairlead opening. Always use the hook strap to hold hook when spooling under no load. Carefully power in the remaining wire cable jogging the control switch to take up the last of the slack. Secure the hook to a suitable anchor point near the winch. Be careful not to over-tighten or damage may occur to the wire cable or anchor point.

⚠ WARNING



TO PREVENT SERIOUS INJURY:

- Stand clear of wire cable and load during operation.
- Be certain the anchor will withstand the load.
- Always use a choker chain, wire choker rope, or tree trunk protector on the anchor.
- Take your time; sloppy rigging causes accidents.